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07.9.2005  
PCT/JP2005/008821

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# THE UNITED STATES OF AMERICA

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UNITED STATES DEPARTMENT OF COMMERCE

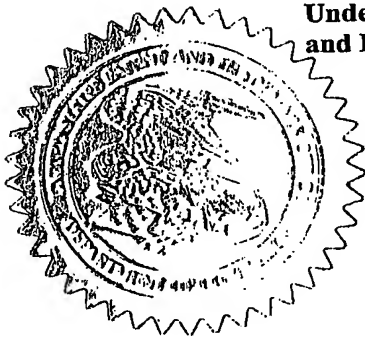
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FILING DATE UNDER 35 USC 111.

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FILING DATE: June 07, 2004

By Authority of the  
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M. K. HAWKINS  
Certifying Officer

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. MSFT123116

PROVISIONAL APPLICATION COVER SHEET

Seattle, Washington 98101

June 7, 2004

17858 U.S. PTO  
60/577616



TO THE COMMISSIONER FOR PATENTS:

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 C.F.R. § 1.53(c).

Transmitted herewith for filing by EXPRESS MAIL is the complete provisional patent application of inventor:

Garret J. Buban  
Full Name of the Inventor

Carnation, Washington  
Residence (City and State or City and Foreign Country)

Title of Invention: UNIVERSAL DISK FORMAT (UDF) ON WRITE-ONCE MEDIA WITHOUT A VIRTUAL ALLOCATION TABLE (VAT)

Please address all correspondence to:

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- X 1. A provisional application for patent consisting of 1 page of specification is enclosed.
- X 2. Our Check No. 155958 in the amount of \$160.00 to cover the total provisional filing fee is enclosed.

LAW OFFICES OF  
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- X 3. The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16, 1.17 and 1.18 which may be required during the entire pendency of the application, or credit any overpayment, to Deposit Account No. 03-1740. This authorization also hereby includes a request for any extensions of time of the appropriate length required upon the filing of any reply during the entire prosecution of this application. A copy of this document is enclosed.
- X 4. The invention was NOT made by an agency of the United States Government or under a contract with an agency of the United States Government.
- X 5. A filing date in accordance with 37 C.F.R. § 1.10 is requested. The Express Mail Certificate appears below.

Respectfully submitted,

CHRISTENSEN O'CONNOR  
JOHNSON KINDNESS<sup>PLLC</sup>

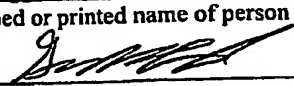
  
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### EXPRESS MAIL CERTIFICATE

Express Mail No.: EV 431 292 295 US  
Date of Deposit: June 7, 2004

I hereby certify that this document and the enclosures listed therein are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10 on the date indicated above and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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EV431292295US

**Title:** Universal Disk Format (UDF) on Write-Once Media Without a Virtual Allocation Table (VAT)

**Field of the Invention:**

In general, the present application relates to computer software and optical media and in particular, to a universal format for write-once media without utilizing a virtual allocation table.

**Introduction:**

The use of the Universal Disk Format (UDF) on write-once or incremental media currently requires the file system to implement and store a Virtual Allocation Table (VAT) in order to handle overwrites of existing data. The management of the VAT must be implemented by everyone who wishes to write a UDF file system driver.

**Strategic Importance of the Idea:**

By having the device handle the overwriting of existing blocks, the file system does not need to implement this logic; except for backwards compatibility. This reduces the complexity of the file system driver.

**Description of the Idea:**

Devices would handle the overwriting of existing data by writing the new data to the next writable block and creating an entry in a table stored by the drive. The file system would continue to use the same logical block number, and the drive would remap the request to the new location based on the entry in the table. In order to reduce the size of this table, the file system would not reuse blocks after they are freed. That is, the file system would have to be aware that it is using write-once media, and adjust its behavior accordingly. The new implementation of UDF would be almost identical to the current implementation on write-once media. The exception is that the file system would not have to use a VAT. It could rewrite blocks as needed, and the device would handle the remapping below it.

The thought behind this idea is that the device would use the normal volume space to store the remapped data. That is, it is writing to the next writable location within the same track that the original block exists. The file system would query the device for the next writable block whenever it needs to allocate new space. So both the file system and the device are sharing the same space for writes. This is not a requirement, however.

**Applications of the Idea:**

This idea could be used to make the UDF file system less complicated. Since the remapping of rewritten blocks has been offloaded to the device, the file system does not need to do it. This also provides more consistency between UDF implementations. There would only be a handful of versions of the chip with this logic that the various devices would use.

This idea could allow for faster and/or more robust remapping, since it could be done by dedicated hardware.

**Claim:**

1. All embodiments discussed and disclosed above.

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